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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

TEST RESULTS OF STEEL

Lab ID : CP-2018-12-31-139 **Date:** 30-10-18
Project Name : Package N0.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer's Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 29-10-18
Sample Type : Sunvik
Reference to BIS codes : IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012.
Date of test: : 29-10-18

Sl.No	Identification of sample	Grade of the sample	Diameter of the steel bar	Weight of the sample	Yield stress	Tensile strength	Elongation	Bend test	Rebend test
			(mm)	(kg/m)	(N/mm ²)	(N/mm ²)	(%)		
1	Sunvik	Fe500	8	0.391	512	652	20.0%	Satisfactory	Satisfactory
2	Sunvik	Fe500	10	0.616	528	672	20.0%	Satisfactory	Satisfactory
3	Sunvik	Fe500	12	0.886	544	668	20.0%	Satisfactory	Satisfactory

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2018-12-31-139 Date: 20/12/2018

Project Name : Package N0.03 (Package Consists of 21 Works)

Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.

Customer's Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 15-12-18

Customer ID : Drain Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 20/12/2018

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	13/12/2018	20/12/2018	149.65 X 150.28 X 149.72	22490	8.614	416.2	18.5	18.5
2	Drain Concrete	M20	13/12/2018	20/12/2018	150.21 X 151.76 X 150.19	22796	8.887	420.3	18.4	
3	Drain Concrete	M20	13/12/2018	20/12/2018	149.07 X 150.39 X 149.05	22418	8.595	417.5	18.6	

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2018-12-31-139 Date: 10/01/2019
Project Name : Package N0.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer's Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 15-12-18
Customer ID : Drain Concrete
Sample Type /Size : 150X150X150 mm
Sample grade/Age : M20 / 28 Days Compressive Strength
Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5
Date of test : 10/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	13/12/2018	10/01/2019	149.58 X	22544	8.897	526.6	23.4	23.0
					150.71 X					
					150.89					
2	Drain Concrete	M20	13/12/2018	10/01/2019	150.09 X	22498	8.382	505.2	22.5	
					149.90 X					
					149.35					
3	Drain Concrete	M20	13/12/2018	10/01/2019	151.19 X	22631	8.422	524.0	23.2	
					149.68 X					
					149.33					

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2018-12-31-139 Date: 20/12/2018

Project Name : Package N0.03 (Package Consists of 21 Works)

Name of Work : Improvements to Roads and Drains at Shanboga Narayanappa Layout at Kodigehalli Ward No.08

Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.

Customer's Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 15-12-18

Customer ID : Drain Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 20/12/2018

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	13/12/2018	20/12/2018	151.97 X 151.82 X 149.35	23073	8.614	430.4	18.7	18.4
2	Drain Concrete	M20	13/12/2018	20/12/2018	149.63 X 149.73 X 150.93	22405	8.887	406.0	18.1	
3	Drain Concrete	M20	13/12/2018	20/12/2018	151.73 X 150.25 X 150.88	22797	8.595	417.8	18.3	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2018-12-31-139 Date: 10/01/2019
 Project Name : Package N0.03 (Package Consists of 21 Works)
 Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
 Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
 Customer's Reference : BBMP/EE/BTP/WO/148/2018-19
 Date of Receipt : 15-12-18
 Customer ID : Drain Concrete
 Sample Type /Size : 150X150X150 mm
 Sample grade/Age : M20 / 28 Days Compressive Strength
 Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5
 Date of test : 10/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	13/12/2018	10/01/2019	151.60 X 149.89 X 149.56	22724	8.897	538.8	23.7	23.3
2	Drain Concrete	M20	13/12/2018	10/01/2019	150.39 X 150.98 X 150.63	22706	8.382	501.9	22.1	
3	Drain Concrete	M20	13/12/2018	10/01/2019	150.64 X 150.87 X 149.09	22728	8.422	545.4	24.0	

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

TEST RESULTS OF GRADATION FOR WMM

Lab ID : CP-RW-2018-12-31-139 **Date:** 02-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanboga Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 31-12-18
Type of Mix : WMM (Wet Mix Macadam)
Date of test : 31-12-18
Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE

IS: 2386 Part IV

Lab ID : CP-RW-2018-12-31-139 **Date:** 02-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 31-12-18
Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test : 31-12-18

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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**DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF
COARSE AGGREGATE (IS 2386 (Part 1) 1963 (RA 2007))**

Lab ID : CP-RW-2018-12-31-139 **Date:** 02-01-19
Project Name : Package No. 03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa
Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout,
Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 31-12-18
Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test : 31-12-18

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID : CP-RW-2018-12-31-139 **Date:** 05-01-18
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer's Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 04-01-18
Sample Type : Bitumen
Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test : 04-01-18

Test Results

Sl.no	Name of Test	Result	Requirements as per IS: 73-2013
1	Penetration at 25°C, in 1/10th mm	64	60 to 70
2	Softening Point, °C	51.2	Min. 40°C
3	Ductility, cm	98	Min. 75cm
4	Flash point, °C	245	Min. 220°C
	Fire point, °C	272	

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**TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011))**

Lab ID : CP-RW-2018-12-31-139 **Date:** 10-01-19
Project Name : Pckage No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 08-01-19
Type of Mix : DBM-Plant (Dense Bituminous Macadam)
Date of test : 08-01-19
Weight of Sample : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specification Limits as per MORTH specification Table 500-10 (grading -2)
37.5	0	0	0	100	100
26.5	172	172	3.44	96.56	90-100
19	1013	1185	23.70	76.30	71-95
13.2	520	1705	34.10	65.90	56-80
4.75	1150	2855	57.10	42.90	38-54
2.36	710	3565	71.30	28.70	28-42
0.3	1053	4618	92.36	7.64	7-21
0.075	200	4818	96.36	3.64	2-8
PAN	182	5000	0.00	0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE BITUMINOUS MACADAM

Lab ID : CP-RW-2018-12-31-139 Date: 11-01-19
Project Name : Pckage No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout Kodigehalli Ward No.08
Agency : Sri.C.G.Chandruppa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 08-01-19
Type of Mix : DBM (Dense Bituminous Macadam)
Date of test : 08-01-19

Table 500-6 : Physical Requirements fo Coarse Aggregate for Dense Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.2	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.65	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.16	Maximum 2%	IS:2386 Part III

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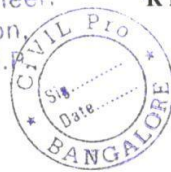
TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2018-12-31-139 **Date:** 11-01-19
Project Name : Pckage No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanboga Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrupa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 08-01-19
Type of Mix : DBM (Dense Bituminous Macadam)
Date of test : 08-01-19

The results of the tests conducted on the Dense Bituminous Macadam mix sample are as follow				
Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.30	11.43	9KN(Min)
2	Marshal flow at 60°C, mm	3.66	3.74	2-4
3	Percent air Voids	4.52	4.58	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.62	14.67	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.13	70.28	65-75
6	Density, g/cc	2.43	2.41	—

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2018-12-31-139 **Date:** 11-01-19
Project Name : Pckage No.03 (Package Consits of 21 Works)
Name of Work : Improvements to Roads and Drain at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 08-01-19
Type of Mix : DBM(Dense Bitumnous Macadam)
Date of test : 08-01-19
Type of Binder : 60/70
% of Binder Used : 5.0%
Weight of Aggregate : 200.0 gm
Weight of Binder : 10.0 gm
Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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**TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011))**

Lab ID : CP-RW-2018-12-31-139 **Date:** 22-01-19
Project Name : Pckage No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drain at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 21-01-19
Type of Mix : DBM (Dense Bituminous Macadam)
Date of test : 21-01-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	477	478
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.6	4.4
4	Average percentage	%	4.5	

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Lab ID : CP-RW-2018-12-31-139

Date: 22-01-19

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 477

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0.0	100.0	100
26.5	35	35	7.3	92.7	90-100
19	39	74	15.5	84.5	71-95
13.2	49	123	25.8	74.2	56-80
4.75	135	258	54.1	45.9	38-54
2.36	30	288	60.4	39.6	28-42
0.3	95	383	80.3	19.7	7-21
0.075	60	443	92.9	7.1	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 478

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0.0	100.0	100
26.5	44	44	9.2	90.8	90-100
19	50	94	19.7	80.3	71-95
13.2	25	119	24.9	75.1	56-80
4.75	165	284	59.4	40.6	38-54
2.36	50	334	69.9	30.1	28-42
0.3	60	394	82.4	17.6	7-21
0.075	68	462	96.7	3.3	2-8

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**TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)**

Lab ID : CP-RW-2018-12-31-139 Date: 16-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandruppa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 14-01-19
Type of Mix : BC-Plant (Bituminous Concrete)
Date of test : 14-01-19
Oven Dry Weight : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	895	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	503	3268	65.4	34.6	26-38
0.3	528	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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TEST REPORT OF AGGREGATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2018-12-31-139 Date: 17-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 14-01-19
Type of Mix : BC(Bitumenous Concrete)
Date of test : 14-01-19

Type of Binder : 60/70
% of Binder Used : 5.0%
Weight of Aggregate : 200.0 gm
Weight of Binder : 10.0 gm
Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : CP-RW-2018-12-31-139 Date: 17-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 14-01-19
Type of Mix : BC (Bituminous Concrete)
Date of test : 14-01-19

Table 500-16 : Physical Requirements for Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2018-12-31-139 **Date:** 17-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandruppa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 14-01-19
Type of Mix : BC (Bituminous Concrete)
Date of test : 14-01-19

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.13	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	—

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**TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)**

Lab ID : CP-RW-2018-12-31-139 Date: 25-01-19
Project Name : Package No.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli
Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar
Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 24-01-19
Type of Mix : BC (Bituminous Concrete)
Date of test : 24-01-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	471	472
3	Bitumen percentage	$\frac{A-B}{A} \times 100$ A	5.80	5.60
4	Average percentage	%	5.7	

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Lab ID : CP-RW-2018-12-31-139

Date: 25-01-19

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.8	62.2	53-71
2.36	88	266	56.5	43.5	42-58
1.18	29	295	62.6	37.4	34-48
0.6	11	306	65.0	35.0	26-38
0.3	46	352	74.7	25.3	18-28
0.15	45	397	84.3	15.7	12-20
0.075	55	452	96.0	4.0	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 472

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.7	62.3	53-71
2.36	88	266	56.4	43.6	42-58
1.18	29	295	62.5	37.5	34-48
0.6	11	306	64.8	35.2	26-38
0.3	46	352	74.6	25.4	18-28
0.15	45	397	84.1	15.9	12-20
0.075	55	452	95.8	4.2	4-10

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : CP-RW-2018-12-31-139 Date: 25-01-19
Project Name : Package N0.03 (Package Consists of 21 Works)
Name of Work : Improvements to Roads and Drains at Shanbog Narayanappa Layout at Kodigehalli Ward No.08
Agency : Sri.C.G.Chandrappa, #1C-301, 3rd Main Block, HRBR Layout, Kalyan Nagar Bangalore-560043.
Customer Reference : BBMP/EE/BTP/WO/148/2018-19
Date of Receipt : 24-01-19
Type of Mix : Tack coat
Date of test : 24-01-19

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.748
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.771
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

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